year a great change took place which has, for generations at least, dispelled all fears of further encroachments, and which may eventually make of old Doniphan something of a pleasure resort.

By the map, it will be seen that as the river came southward it made a sharp turn toward the west, at *A*, dividing into two branches which soon united, encircling what was known as "The Island" (*I*). The last June rise was unusual for this locality, and the upper branch of the river soon broke over the "point," at *B*, thus forming the first cut-off. But it was not long until the lower portion overflowed the bottoms directly south of it, taking a straight course across the neck and joining the main channel below. Thus, two additional islands, *C* and *D*, were formed, and the old channel to the north of them remained filled with water and constituting the so-called lake. This lake is about four miles in length and, in places, a half to three-fourths of a mile wide. A number of soundings, taken October 9, showed depths varying from 10 to 18 feet. Deposits of sand and mud have about closed up both ends of the lake, but the southern end can never become completely closed, as Independence creek enters about a mile from this end, and will furnish more or less current, especially in time of freshet, thus tending to keep the channel open.

SELECTIVE ABSORTION OF HEAT BY LEAVES.

BY A. G. MAYER, LAWRENCE.

In this research, it was necessary that the thermopile measure with precision down to thousanths of degrees of temperature; it was, therefore, important to cut off all air currents.

The thermopile was incased in two tin boxes, the one outside the other, leaving an air space inclosed by tin all around the instrument; a suitable opening, which could be closed at will with a screen impervious to radiant heat, allowed the heat to fall directly upon the thermopile when desired.

By allowing heat from any source to fall directly upon the thermopile, and then obliging it to pass through a leaf placed in its path, it became possible to determine the effect of the leaf upon the radiant heat.

Experiments were made upon a great many leaves and petals of flowers, and the results were surprisingly alike. As an example, we will cite the case of elm leaves. A single elm leaf in the path of the heat allows only 23.5 per cent. of the radiant heat to pass through it; so 76.5 per cent. is absorbed by the leaf. If now the heat, which has already passed through one leaf, be allowed to pass through a second, we find that the second absorbs only 21.4 per cent. and transmits 78.6 per cent., showing plainly a remarkable selective absorption. A third leaf in the path allows 83 per cent. of the heat which passed through the second leaf to pass through unabsorbed. The transmitting powers of leaves varies from 17.6 to 28.3 per cent. The lower number is for the thick leaves of the mullen, and the higher represents the transmitting power of rose leaves. The transmitting power of various flower petals was as follows: Red rose, 31.2 to 33.3 per cent.; yellow rose, 23.9 per cent.; white rose, 26.6 per cent.; white petals of *Œnothera speciosa*, 26.6 per cent.; petals of purple grass, 30.8 per cent.

Leaves are, therefore, good absorbers of heat, but bodies which are good absorbers are good radiators. The radiation from leaves is about 78, lampblack being 100. We see, then, that were the leaves to radiate their heat at night at this rapid rate they would soon lose much of the energy which they received from the sun dur-

ing the day. The research has, however, developed the remarkable fact that when leaves become covered with dew the radiation is the same for all, being that of a dew surface, and is much less than the radiation of naked leaves, being only 62.7 per cent. of lampblacked surfaces. This is one of the causes that has contributed in no small degree to make coal so abundant upon the earth.

NESTING OF THE PIED-BILLED GREBE.

BY A. M. COLLETTE, EMPORIA.

The pied-billed grebe (*Podilymbus podiceps*) is known to every boy who ever shouldered a gun and wandered along our creeks and rivers by some of the following names: Thick-billed grebe, Carolina grebe, dabchick, dipper, water-witch, devil-diver, or hell-diver.

It is a common summer resident in our State, and very abundant in migration, arriving the last of April and remaining until late in the fall.

These birds (like all the family) are noted for their wonderful power of diving and swimming. I think it would be safe to say that in a minute's time they can dive 300 or 400 feet.

Colonel Goss, in his "History of the Birds of Kansas," says: "Some writers hold that these birds do not use their wings under water. This may be so; but I am inclined to think, when out of the rushes and with nothing to catch or tangle, they use them to accelerate their speed."

They do not often take to wing, relying more on their power of swimming and diving as a means of escape; and it is almost impossible to force them to leave the water, but when in the air, fly with great rapidity, with neck and feet stretched out to their full extent.

About their breeding places they are very shy, and, when approached, will cover their eggs and slip quietly away, thus leading a great many ornithologists to believe that these birds do not occupy their nests during the day, but cover them with decaying vegetation and the eggs are kept warm by the artificial heat from this material.

The doubt that existed in my mind with regard to this has been entirely eradicated. A good opportunity offered itself this summer to watch their nidification and I took advantage of it.

On a large pond, about three miles from Emporia, covered with rushes and other aquatic plants, these birds are found in great abundance. They were first observed nesting here by V. L. Kellogg, of the State University, in 1885, at which time he procured a number of sets. It might be interesting to add that they have never nested here since until this summer, when I took about 20 nests.

The nests are composed of decaying reeds, rushes, and grass, mixed with a debris brought up from the bottom. This structure is fastened to the flags and reeds, making a floating island of decaying material a few inches above the water, upon which a small nest is built.

Two of the nests that I found were located in some small aquatic plants a short distance from the bank, in about three feet of water, and from a tree on the bank the eggs could be distinctly seen.

From this tree I could watch the birds without being seen by them, and during all the time I watched them I never saw them leave the nest unless disturbed, and